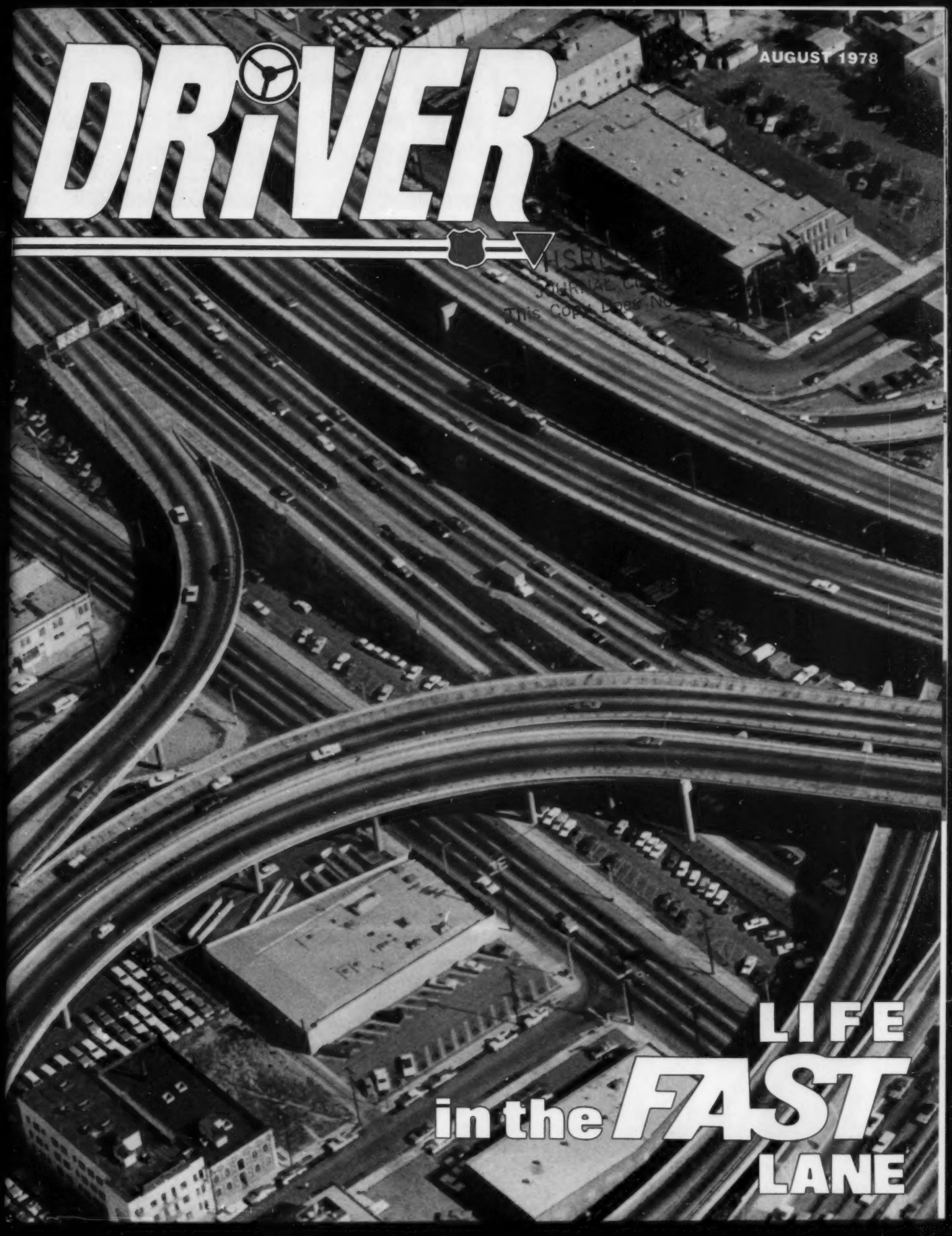
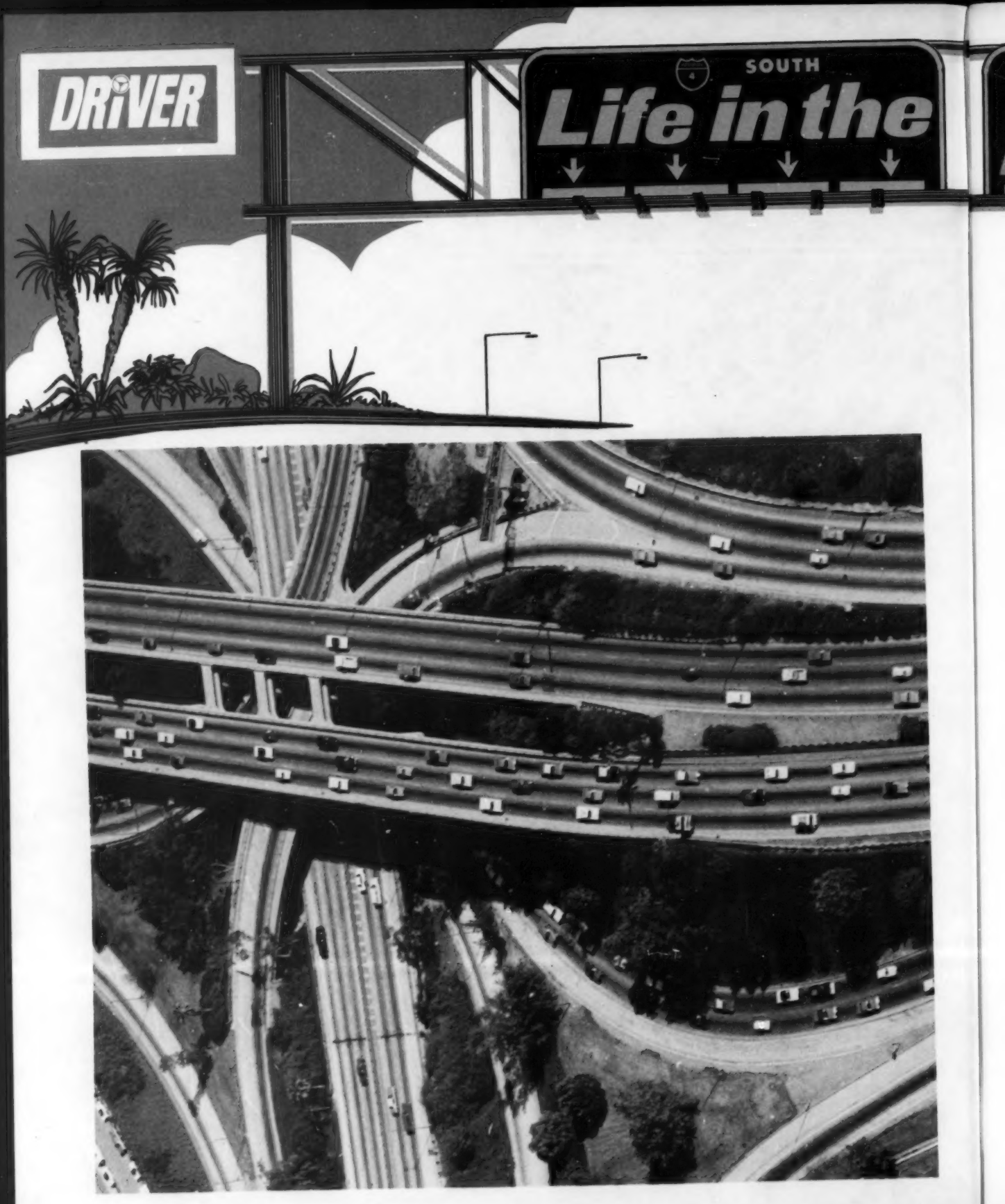
DRIVER

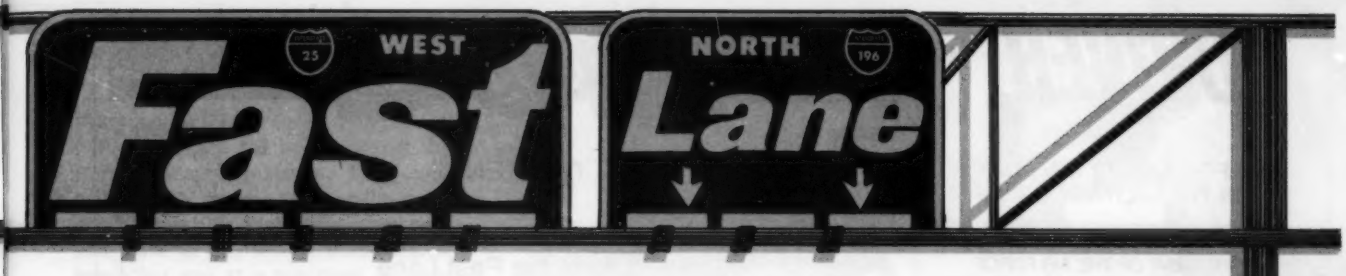
AUGUST 1978

HSRI
JOURNAL COPY
This COPY Does NOT



LIFE in the FAST LANE


DRiVER
SOUTH
Life in the



Airman Horst Anbuggy, muttering to himself:

"How'd I get into this mess? I'm just a nice, normal first-termer, at my first station after basic, in my first car, driving on my first freeway. There are 12,000 cars all around me, and they all want to get into my lane, and they all drive faster than I want to, and there are too many things to watch, and I want to get off this stupid freeway, and I can't find the right exit. . . ."

A1C Horst Anbuggy, a couple of years later, thinking to himself:

"I knew if I didn't get out early I'd get caught in a rush hour mess . . . looks like a bad one . . . oh, well . . . what did Gwen say she wanted for her birthday? Jewelry . . . she's hinting at something, as if I couldn't guess what . . . what did that turkey at CBPO say about my leave balance? . . . I'd better stop for a haircut tomorrow before the Captain gets on my case again. . . . Did I leave my newspaper in the office? . . . don't see it anywhere. . . ."

Our friend seems to have gone from one extreme to another, from fear of the freeway to relaxation and perhaps inattentiveness. Neither will make for good driving—fear is not necessary and inattentiveness is dangerous. He should try for something in between.

Maybe some of you DRIVER readers fit into one extreme category or another.

For those of you at the fear end of the scale, let us say that freeways should not be avoided. There are many cars and they go at high speeds, true. But it is also true that freeways are safer routes to travel than most city streets. You heard right. Safer. The reason is that statistics show most auto accidents happen at intersections. Freeways, whatever their hazards, don't have intersections. With the proper skills, you can make freeway driving a no-sweat experience.

For those of you who have become blasé about driving the super-highways: Please, either get alert or stay home and read the newspaper.

A freeway is no place for timidity or for overconfidence. Even if you're in-between, you may need some of these pointers—you may not be as good as you think you are. (And that's overconfidence, too.)

So dust off your '53 Studebaker and let's go at it.

Freeways, or super-highways, are those big, concrete routes in and around the large cities. They are like interstate highways, but with more lanes, more exits (and entrances) and many,

continued

Here you are in the right lane. A nice place to travel, except that you frequently contend with cars entering from on-ramps. If you're in the right lane, assist the oncoming motorists by moving over to the left when you can. They'll appreciate it. Often there'll be cars in front of you that are leaving the freeway. They'll slow down, and you might have to also.

DRIVER

THE
TRAFFIC SAFETY MAGAZINE
FOR THE MILITARY DRIVER

DEPARTMENT OF THE AIR FORCE
HQ AIR FORCE INSPECTION AND SAFETY CENTER
Norton Air Force Base, California 92409

Lt Gen JOHN P. FLYNN
The Inspector General, USAF

Brig Gen GARRY A. WILLARD, Jr.
Director
Aerospace Safety USAF

PUBLISHED MONTHLY IN COOPERATION
WITH
THE DEPARTMENT OF THE ARMY
AND
THE DEPARTMENT OF THE NAVY

Dr. FRANCIS S. McGLADE
Director of Safety
United States Army

RADM H. P. GLINDEMAN, JR.
Commander
Naval Safety Center

AFRP 127-1
Entered as a Controlled Circulation Rate
Publication (USPS No. 335490)
at Santa Ana, CA 92711

SUBSCRIPTION—DRIVER is available on subscription for $10.00 per year domestic (90¢ per copy); $12.50 per year for foreign mailing ($1.20 per copy), through the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Back issues are not available. Changes in subscription mailings should be sent to the above address. Use of funds for printing this publication has been approved by Headquarters, United States Air Force, Department of Defense, Washington, D.C. No payment can be made for manuscripts submitted for publication. Contributions are welcomed, as are comments and criticism. Address all correspondence to the Editor, DRIVER Magazine, AFISC/SEDD, Norton AFB, CA 92409.

ATTENTION DEPT OF THE NAVY PERSONNEL: Address all queries concerning distribution to NAVSAFECEN, NAS, NORFOLK, VA 23511, Attn: Safety Publications Dept. All other correspondence will be welcomed by the Editor.

The contents of this magazine are informative and should not be construed as regulations, technical orders, or directives unless stated. Address reprint requests, stating intended use of material, to the Editor. The Editor reserves the right to make any editorial changes in manuscripts which will improve the material without altering the intended meaning.

The products illustrated
in this magazine are not necessarily
endorsed by DRIVER or
the U.S. Air Force

Certain individuals shown in
this magazine are not members of
the Air Force and therefore
do not conform to Air Force
grooming standards.

AUG

VOLUME 12 NUMBER 3

CONTENTS

Features	Page
Life in the Fast Lane	1
Duck Dumps Cycle	9
Reasons They Gave	12
All in a Day's Work	14
Departments	
Double Clutch	2
Timely Topics	10
The Backyard Mechanic	22
Backfire	28
The DRIVERS	Back Cover

Col DAVID E. RALEY
Chief, Safety Education Division

VIRGINIA HENDRIX
Editor

SSgt DON HOLT
Technical Editor

JERI ROOD
Feature Editor

ALICE MILKEY
Editorial Assistant

DON KELLEHER
Art Director

LORRAINE HAMBLEN
Staff Artist

CLIFF MUNKACSY
Staff Photographer

THE EDITOR SPEAKS DOUBLE CLUTCH

USED-CAR "STICKERS"

If things develop as expected in Washington, you may soon be able to visit a used car lot and find on each car a sticker disclosing the condition of the vehicle.

Although dealers could still sell "as is" (unless prohibited by state law), they would nevertheless have to inspect and evaluate the car—even if they were going to wholesale it to another dealer. They would have to indicate whether the car was a rental or lease vehicle, had been privately owned, or had been flooded or totaled.

The Federal Trade Commission (FTC) is pushing hard for these disclosure stickers on used cars. The dealers of course are opposed. Dealers say inspection costs could run as high as $200 or more and that cost would have to be passed on to the customer. They also fear they could be forced into an involuntary warranty under some state laws, although this is not the intent. And the average used car dealer doesn't have the facilities to conduct the inspections anyway. Car renters and leasers feel the value of their cars will drop if the public really knows about prior use.

Government lawyers say the FTC is not trying to supervise and enforce millions of sales of used cars but to inject information and then let the market function. They point out that in Wisconsin, which already has such a law, there has actually been a drop in used-car prices and not an increase. A survey of Wisconsin dealers shows that inspections are costing between $15 and $25.

The FTC recommendation is expected to cover not only cars but light trucks and vans rated at less than 8,500 GVW.

many more cars per square mile.

Freeways are the best roads of the large metropolitan areas. They connect the city streets, and provide easy, quick access to just about anywhere you want to go, with a minimum of headaches and at a minimum expense in time. Their convenience makes them very popular with the motoring public, and this in turn makes them hazardous places, because of the vast numbers of

The middle lanes provide the most room for maneuvers. You can get around slower-moving vehicles, and the faster-moving ones can get around *you*.

cars on them and the speed at which they travel.

Driving on them requires a few special techniques, but more importantly it requires care and alertness.

Before you go . . . Unless you know exactly the road you're taking and where you're going, plan ahead. Freeways are very well marked with signs for cross streets, but that's no help if you don't know the area well. If you don't, try using a map. We can hear the screams now: "A map? A MAP?!? Those things are made for torturing people! They have tiny little lines for streets and you go blind trying to read the names and worst of all you can't fold the ¢%$#*& things up after you fail to read them."

Yes, we've heard it all before, and we're not impressed. For finding your way around, there's nothing that beats 'em. And there's no great trick to reading the maps—just use the index and a little common sense. If you can't read the small print, get a little magnifying glass. As for refolding the map when you're through with it, you're on your own.

You can get good maps from most service stations, even though many of them have started to charge for the maps. A good idea is joining an automobile club. They'll give you any maps you want for free. There's the American Automobile Association Auto Club, and there are others through auto insurance companies like Allstate and department stores such as Montgomery Ward. Check into them.

Let's say you know where you're going and have found the route from your house to that steel and concrete monster, the FREEWAY. You're going to go from your present location in West Covina to the community of Long Beach to see the Queen Mary. You decide you need to get on the San Bernardino Freeway (west) and go to the interchange for the San Gabriel River Freeway. Taking that south, you travel *past* the interchanges for the Pomona Freeway, the Santa Ana Freeway and the Artesia Freeway, until you get to the interchange for the San Diego Freeway. Taking the latter north, you travel to the Long Beach Freeway

continued

interchange and head south again until you get off somewhere near the old ship. Simple, right?

Well, for the novice freeway driver, the hardest part may be at the beginning – where we said you "get *on*" the freeway.

On-Ramps . . . Yes, entering a freeway may be the trickiest part. You get on at a place that strikes abject fear into the hearts of novice drivers – the on-ramp. Even experienced freeway drivers (the wise ones) have great respect for on-ramps. Well, it can be done, and fairly easily, if you'll pay attention for a bit.

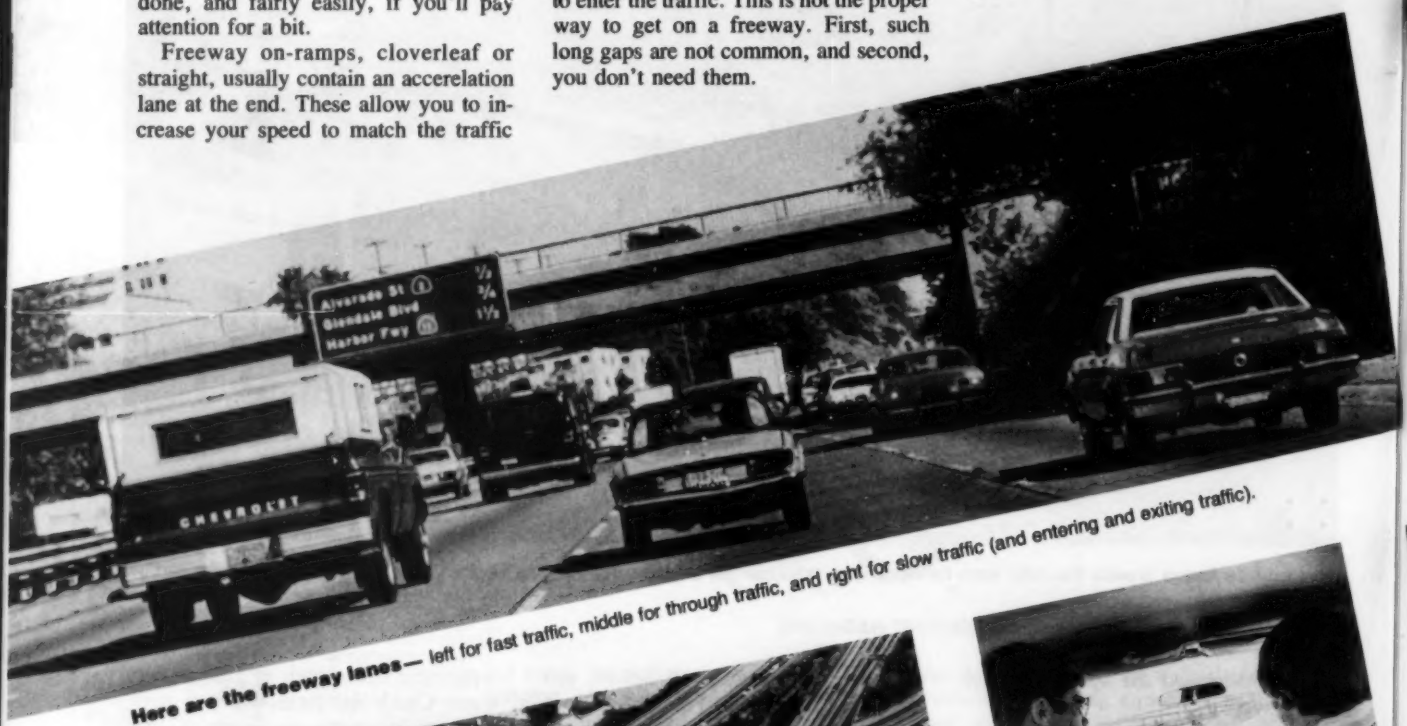
Freeway on-ramps, cloverleaf or straight, usually contain an accerelation lane at the end. These allow you to increase your speed to match the traffic on the freeway. Then, all you have to do is move into a convenient space in the traffic flow.

"Ah!" you say. "But what if there *isn't* a convenient space to jump into?" Trust us; in most cases other than severe traffic jams, there'll be a place for you. You just have to gauge your speed to move right in, or you'll tie up those behind you who are also waiting to get on.

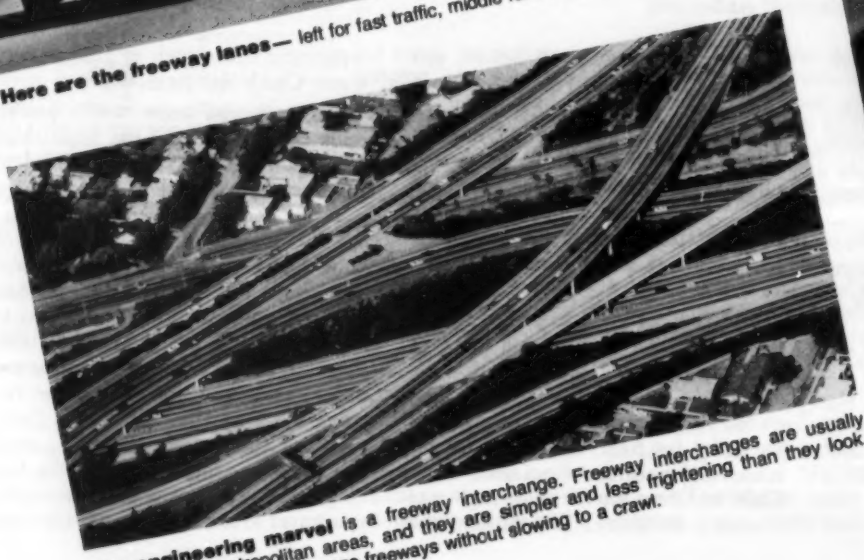
A lot of people make the mistake of taking the on-ramps slowly, thinking they need a very long gap in which to enter the traffic. This is not the proper way to get on a freeway. First, such long gaps are not common, and second, you don't need them.

If you take the on-ramp slowly, or even stop at the top to wait for what you consider a suitable gap, you'll just have to accelerate that much faster when the gap appears. Which is fine for a Corvette, but not too great for a Volkswagen.

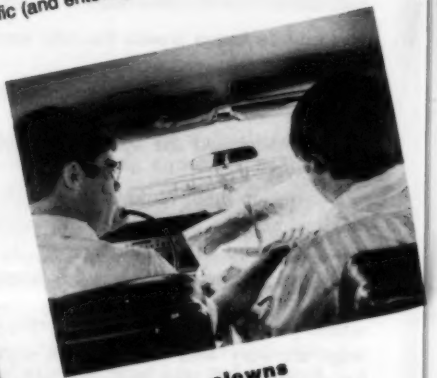
Use the ramp and the acceleration lane to bring your car up the highway speed and then merge into the traffic. This will require you to look for your gap, watch the cars on the freeway, and watch the road all at the same time. (By quick glances back and forth, not with



Here are the freeway lanes— left for fast traffic, middle for through traffic, and right for slow traffic (and entering and exiting traffic).



This engineering marvel is a freeway interchange. Freeway interchanges are usually found in large metropolitan areas, and they are simpler and less frightening than they look. They enable motorists to change freeways without slowing to a crawl.



These two clowns probably don't appreciate the dangers of inattentiveness while on a freeway. If they want to look at a map, why don't they stop in at the Burger King and look while they eat?

eight pairs of eyes.) Sounds bad, but it's not difficult when you get used to it. Don't be timid, and on the other hand don't be foolhardy.

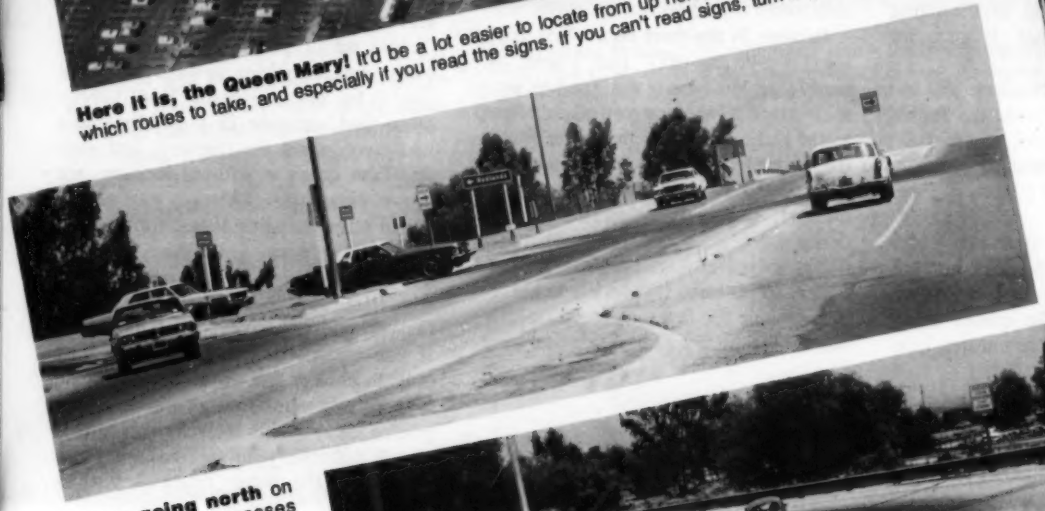
Your car is equipped with turn signals. Use them. Signal your intentions. You might think your presence on the on-ramp will alert the other drivers that you're getting on, but give them the extra assurance of your signal.

If you should get stopped at the top of the ramp and can't get in, you'll have to wait for that large gap, or for some kind motorist to move over. Don't try to force your way in where there isn't room.

And other horrors: There are many —far too many— places on the freeway where an on-ramp acceleration lane leads directly to a deceleration lane for an off-ramp. You might find one of these designing nightmares at a cloverleaf interchange, but they're not limited to there. Such places are confusing and hazardous in the extreme. Traffic crisscrosses and those trying to accelerate into the flow of traffic have to whip around those trying to get off the highway.

continued

Here it is, the Queen Mary! It'd be a lot easier to locate from up here, by air. But using the freeways can be almost as simple, if you know which routes to take, and especially if you read the signs. If you can't read signs, turn in your driver's license.



We're going north on a road that overpasses the freeway. Let's go east to the community of Redlands, California. If it's to the east, what's that sign pointing toward the west?

Here's a left turn onto the on-ramp, which twists around, snake-like, to the right and then spills onto the freeway. Since it's also an off-ramp from the west, you have to watch traffic from maybe three different directions. Caution is your only defense in oddities like this.

continued

Like it or not, you'll find a few places like this one where the on-ramp leads in from the left, directly into the fast lane. Whether you're doing the merging or the being-merged-upon, watch it.

The only advice we can offer in situations when you encounter one of these monsters is—be careful. When possible, avoid this kind of area like the plague.

Okay, now you're on the freeway. And you need to get into a lane that will provide you with some room.

Freeway lanes work like this: The left lane is for the fast-moving traffic. The right lane is for the slow-moving traffic. The middle lanes, if any, are the through lanes.

Pick the lane that will allow you the space you need and provide the fewest problems. If you're new to the freeways or don't feel comfortable on them, you might use the right ("slow") lane. Lots of people do.

But remember, the right-hand lane is also the one in which cars enter and exit the freeway (except for some places where the traffic comes in on the left lane, but these are not true freeways). If you like to travel in the right lane, be prepared for the car ahead to slow for an exit, or for a car to enter on your right, or for a car on your left to move over to exit the freeway. If the exiting car slows too much, move to another lane when it's safe to do so. And if a car is entering, move over to allow him a gap to get in. Who knows? You might start a trend and somebody'll let you in next time.

Driving in the fast lane: You could also drive in the left ("fast") lane. Actually, the left lane is designed to serve as a passing lane, so you should keep to the right and allow the faster motorists to go by. If someone tailgates you in the left lane (or in any lane for that matter), move over, even if you're doing the legal speed limit. This type wants to get around you and go even faster, so let him. It'll be his ticket.

If *you* are the faster motorist (legally, we hope) just watch everyone carefully, and never tailgate anyone. NEVER. You know how that makes *you* feel, so don't pull that nonsense on anyone else.

We feel the middle lanes or through lanes, are the best to travel in. They move well, and there are more directions to go in the event of trouble.

Whatever lane you choose, always watch for any quick movements by other cars. Anyone could dart in front of you and spoil your grillwork and your day.

Try to keep your speed steady; move along at the rate most of the other cars are going. This will keep an even space between you and the other cars, and your gas mileage will be better.

Now as to passing: It's easy to pass a slower-moving vehicle on the freeway; it happens all the time. But remember there are many more people all around you than there would be on a city street. All of them need to know what you're going to do, so remember the turn signals. Use them to show your intention to pass or just to change lanes. And, again, use them when entering or leaving the freeway.

And while you're signalling, look over your shoulder toward the lane you'll be moving into. You'll very often find someone in your blind spot while you're on the freeway, and sudden lane changes without looking can prove disastrous. (Always cancel the signal after changing lanes, too!)

Those freeway interchanges, like the ones we mentioned in our example trip itinerary, look forbidding, but they're really simple, and handy too. If you make sure you're in the correct lane to change freeways (or out of the way if you want to stay on this one) you're okay. The interchanges allow you to maintain your speed and get into traffic on the other freeway with a minimum of hassle.

Lemme outta here!: Now that you're on the way, you can go with the

Here's a sign you should watch. Your street, Adams Street, is there at the bottom—2½ miles.

Now it's only 1 mile.

A Signalling Primer: The turn signal lever is the one on the left side of the steering column. If you want to signal for a left turn, you pull the lever downward. If you want to signal for a right turn, you pull the lever upward. If any of this is a surprise to you, please take driver's training again before you get in your car.

flow and watch for your exit. Most freeways will be marked well enough so that you'll get plenty of advance warning that your exit is coming up. The signs will say, "Smith St. 1½ miles," "Smith St. ¼ mile," "Smith St. Right Lane," "Smith St., Next Exit."

But despite all this you may for some reason miss the exit. Perhaps you're busy watching and avoiding some erratic drivers, or maybe you

continued

When you see "Adams Street, Right Lane," it's time to get into the right lane, just like it says. Isn't that clever?

Now here's the exit sign, complete with an arrow. Congratulate yourself on another successful journey on our nation's freeway system.

continued

Hey! You missed your turn-off! But now is not the time to try and correct—it's a little late at 55 miles per hour, and it's dangerous. Go to the next exit and get off there. Then backtrack to where you want to be, by means of the streets or the freeway.

can't get into the right lane because of a mass of autos there. Or maybe your freeway isn't as well marked as ours. Whatever the reason—even inattentiveness (shame on you!)—it could happen.

If you miss it, it's no big deal, really. Just go to the next exit and get off there. There'll probably be signs all around telling you how to get back on the freeway, going the other way. If there aren't, stop in at a service station and ask. They're usually happy to help. Then you can get back on the freeway and go back to the right exit. Or, if it's close or somehow more convenient, you can backtrack on the city streets.

It all depends on how far wrong you were, and whether you got off after your desired exit, or before, as sometimes happens. It's very helpful to know the names of the exit just *before* and the one just *after* yours. When you see a sign for the exit before, you know yours is coming up next. If you see the one after, you know you've missed yours somewhere.

But don't feel embarrassed in any way about it if you go wrong. It happens to every driver once in a while,

If you get off at the wrong place, look for a sign like this that'll point the way back onto the freeway. If you get lost, ask somebody like a service station attendant. They're usually happy to help.

especially when he's on unfamiliar turf.

Once you're in the right lane and onto the correct off-ramp, you've got it licked. Except for your speed. You're now leaving the high-speed traffic of the freeway for the moderate speeds of the city streets. Slow down. There will be a speed sign on the ramp—decelerate to match that speed.

You might be able to take the ramp at a higher speed, but . . . A friend of ours failed to slow on an off-ramp. There was a curve to the right at the end that led to an access road. Because of his speed, he couldn't make the turn and hit the curbing, depositing the front half of the car onto the grass. He was lucky; the wheels were still attached and all he did was mess up the front-end alignment. But that's bad enough.

We'll take just a moment to mention some special cases. One is driving the freeways at night. Another is driving in bad weather, be it fog or rain or snow. The technique is the same in all cases—slow down. Any time visibility is less than perfect, that's the best remedy.

Despite their good reputation, freeways occasionally are the scene of accidents. And accidents with that many cars around can be catastrophic. To avoid getting into one that's already taken place, watch far ahead. If brake lights appear, believe them. Slow down; there may be a crack-up ahead. And if there is, for Pete's sake don't watch the clean-up—slow down as much as necessary to get around the accident and watch what you're doing. If you don't you might start *another* accident.

We can't stress the attention bit too much. When you're on the freeway, your attention should be directed totally on your driving. Sounds logical enough, but how many times have you seen some nut trying to wiggle out of his jacket with one arm and drive with the other? Or eat a sandwich. Or grope for something he dropped on the floor. Or roll down a window. And then there's the one who can't talk to someone in the car without looking at him, and spends more time looking at his passenger than at the road.

Given the choice of the scared guy or the too-relaxed one, we'll take the scared one—at least he's watching the road.

DUCK dumps cycle

Whatta ya' mean, a duck ran into your motorcycle and caused an accident?

Probably one chance in a million or more, but it happened, and a helmet undoubtedly saved serious injuries.

"I always believed in wearing helmets, but the accident just reinforced my beliefs," said Sgt Keith J. Rhinard, after taking a motorcycle spill in San Antonio, Tex.

Rhinard, a management engineering specialist with Hq U.S. Air Force Security Service, Kelly AFB, Tex., suffered a bruised collarbone and scratched elbows and knees after colliding with a flying duck.

"I was on my way to work when I saw a duck fly across the road. When I arrived in the area where I first spotted him, he decided to make a U-turn. I tried to avoid him, but he flew into the rear wheel of my bike, causing me to lose control and go into a slide. I fell off the bike at about 40 mph. A couple of guys stopped and helped me get to Wilford Hall Medical Center."

A reader may be tempted to laugh at this story, but Rhinard is quick to point out that the accident did happen, and that the helmet probably saved his life.

"Look at the scratches on it," he says, adding "these scratches on this helmet could have been on my head. I think anyone who rides a motorcycle on an open road without a helmet has got to be crazy."

A busted headlight, two broken turn signals, and some torn clothes may cost Rhinard about $70 to replace. The duck wasn't so lucky—his U-turn days have been "spoke" for.

(USAF photo by Sgt Lorenzo D. Harris)

Sgt Keith J. Rhinard sits with a "herd" of ducks in San Antonio, Texas. A duck of this type recently dumped Sgt Rhinard's motorcycle, causing minor injuries.

Timely Topics

CAR THEFT CRACKDOWN

The Transportation Department, leveling its sights primarily on joyriding thieves, has announced plans to require automobile manufacturers to install anti-theft equipment beginning with 1981 models.

The devices include protected ignition wires to prevent a car from being started without a key, hood latches that can be released only from inside the car and rounded doorlock mechanisms that prevent a door from being opened by poking a coat hanger through a window crack.

Many newer model automobiles already include one or more of the protective systems that would be required by the proposal, announced by the department's National Highway Traffic Safety Administration.

Joan Claybrook, the agency's administrator, said the proposed rule is aimed mostly at thwarting young thieves who steal vehicles for transportation or to steal parts.

"The joyrider thief is involved in at least a third of the actual number of vehicles stolen, but accounts for a very large majority of stolen vehicles that are later involved in accidents,"she said.

Ms. Claybrook said approximately one million vehicles were stolen in the United States in 1976, and that the cost to society is about $2.9 billion a year. She added that stolen cars cause approximately 130 fatalities and 5,000 disabling injuries annually.

The traffic safety administration estimated the manufacturers' cost of installing the security devices would be $1 to $2 for each passenger car and $3 to $5 for each light truck and multipurpose vehicle.

The proposed changes would require the following:

- The hood latch must be releasable only from the passenger compartment.
- The ignition key must be different from the door and trunk keys.
- Installation of door lock buttons that cannot be opened by external devices such as a coat hanger.
- Door locking mechanisms inside the panel must be shielded to prevent tampering.
- The ignition system must have a capacity to become inoperable if the ignition lock is removed.
- Ignition wires must be protected to reduce hot-wiring starts.

NEW FREE CONSUMER TIRE GUIDE READY FOR SUMMER DRIVERS

A new Consumer Tire Guide, with up-to-date information on the latest auto tires, has been issued by the Tire Industry Safety Council just in time for the summer driving season.

"In addition to offering valuable summer tips, the guide contains information that will prove useful all year," said Council Chairman Malcolm R. Lovell, Jr.

The 16-page booklet stresses the importance of proper inflation for maximum safety and economy. It contains load and inflation tables for all types of tires, including the new "P-series" metric tires. It also has a new chart showing "preferred," "acceptable" and "not recommended" tire combinations.

A free copy of the pamphlet may be obtained by sending a stamped, self-addressed, business-sized envelope to Tire Industry Safety Council, Box 1801, Washington, DC 20013.

Chairman Lovell warns that underinflation, bald tires and overloaded vehicles are the three biggest threats to the vacationing motorist.

"Unless preventive measures are taken, any of these factors could lead to a sudden tire failure," Chairman Lovell says.

The Tire Industry Safety Council offers these other tips for safer summer driving:

- Check your inflation pressure at least once a month and before every long trip. Add four pounds of air to the recommended pressure for turnpike driving over extended periods but don't exceed the limit molded on the tire sidewall.
- Carry your own air pressure gauge. Service station air towers are often off by several pounds, studies have shown.
- Beware of "summer ice." Water mixed with dust and oil acts as a lubricant on roadways and reduces traction even if your tires are new. Particularly dangerous is a light drizzle following a prolonged dry spell.
- Check regularly for objects imbedded between tread grooves. They can eventually cut into the rubber, leading to air loss and tire failure.
- Do not reduce air pressure after driving. Heat buildup during driving is normal and tires will cool down to proper air pressures on their own after you stop.
- Be on guard against hydroplaning, a phenomenon that occurs on wet pavement and literally causes your tires to leave the road. As water accumulates on the roadway, tires may begin to "surfboard" at increased speeds, especially over 40 mph. Worn tread increases the incidence of hydroplaning and the possibility of losing control of the vehicle.

CB SAVES BLINDED DRIVER

Francis Gilmore of Grand Rapids, Mich., was driving his 40-ton auto transport truck along the Kansas Turnpike near El Dorado, Kan., when suddenly he lost the sight in both his eyes. Instinctively he hit his brakes and the truck started to swerve across the highway. Fortunately, Randy Jones, an auto driver from Wichita, Kan., with whom Gilmore had been talking on his citizen's band (CB), was traveling directly behind Gilmore and noticed his erratic

driving. "Somebody help me!" Gilmore screamed over his CB. Jones told him to calm down and, using specific directions, "talked" Gilmore to a safe stop on the shoulder of the road. Jones said later that Gilmore drove blind for close to three-quarters of a mile. The cause of his blindness was not immediately determined. (*Traffic Safety,* National Safety Council)

GASOLINE ECONOMY

Firestone's new "Fuel Fighter," a metric-sized Steel Belted Radial 721 tire, has refinements permitting inflation pressures to be increased to 35 pounds. The higher pressures, combined with new tread compounds, lead to a 35 to 40 per cent reduction in rolling resistance. Firestone claims this can result in gas savings of 8 to 11 per cent compared to comparably sized bias or bias-belted tires at 26 pounds. The tire is used with a conventional wheel.

DRIVER EDUCATION NEVER STOPS

Veteran driver educator William Shore of the Society of Professional Drivers offers these tips for day-to-day tips on driver improvement.

"There's an incredible number of pedestrian fatalities and many of these could be prevented," Shore explains. "First you have to understand pedestrians.

"They never look after leaving the curb. Once in the street it's your problem—not theirs. The kids run, the old folks shuffle and the others walk without looking. Be in tune to the fact that they aren't looking and watch for their interests as well as yours."

The responsibility for safe driving falls squarely on every driver's shoulders. The more a driver anticipates problems, the better situations can be handled.

"Have an escape hatch planned," says Shore. "When you are on the expressway you never know when a driver will descend the entrance ramp right into your lane."

Shore says he shudders when thinking about all of the alcoholics on the road.

"One of six cars is driven by someone who has been drinking and one out of 50 cars is driven by a serious drunk," he says.

As an added precaution, Shore suggests that drivers slow down and watch carefully when passing a tavern.

"Chances are the cars leaving have an intoxicated driver," he says. "Assume the worst and prepare yourself for all situations."

The Automotive Information Council finds that many companies with fleet cars and trucks are teaching driver improvement techniques to their employees. The basis of most programs is building an awareness of road problems and developing coping mechanisms to handle a variety of situations.

CB ANTENNA SAFETY

The Consumer Product Safety Commission has ruled that manufacturers of citizens band base station antennas and television antennas will be required to supply customers with installation safety information.

The Commission staff said communications antennas are the leading cause of electrocutions among consumer products. The staff estimated that about 200 persons in 1975 and 275 in 1976 were electrocuted in accidents involving communications antennas.

The staff said most of the deaths were the result of antennas contacting power lines while the antennas were either being put up or taken down.

Citizens band base stations are those at a permanent place, such as in a home, as opposed to mobile units in cars and trucks.

The commission regulation will require warning labels, safety installation instructions, and written information on hazards to be given to the customer at the time of purchase.

The required statement accompanying instructions will be: "Warning: installation of this product near power lines is dangerous. For your safety, follow the installation directions."

Two of the last few AF people to die during home antenna work were qualified electrical technicians. If it can happen to them. . . .

BAN ON SENDING POVs TO JAPAN CONTINUES

An indefinite embargo continues on the shipment of cars to Okinawa and Japan. A Pentagon source said that there is nothing new to report, except that the embargo, which started 1 May 1977, remains.

Last year, DOD ordered a "temporary" halt to shipment of privately owned vehicles (POVs) manufactured after 31 Mar 1976. The halt was called because of strict emission controls imposed by the Japanese government.

Attempts to comply with the emission control rules could cost POV owners more than $500.

An additional problem is the unavailability of lead-free fuel at the Pacific locations.

A DOD plan to ask Congress for legislation to reimburse personnel for costs incurred in meeting the Japanese standards has not materialized, the Pentagon source said.

TENNESSEE PASSES CHILD RESTRAINT LAW

The State of Tennessee now requires parents to have their four-year-olds or younger children wear restraint devices while riding in a car. The law, which became effective 1 Jan 1978, provides for fines of $2 to $10 for failure to buckle the children in their seats.

A state safety official said, "There is no way we can enforce the law without voluntary cooperation." Periodic checks are being made along some highways to see how the law is being accepted.

Parents would not be required to use child restraints if the child is held in the arms of an older person. Additionally, failure to have a child restraint system cannot be considered as contributory negligence in a lawsuit and such failure shall not be admissible as evidence in a civil trial, according to the new law.

Child restraint systems are different from adult seat belts as they are designed for the small body structure. They cost up to $30 and can be anchored with most standard seat belt devices.

Tennessee is the only state in the Union to have this type of law.

EPA WILL RECALL 1976 AMC CARS

The Environmental Protection Agency (EPA) plans to recall all cars manufactured by American Motors Corp. In the 1976 production year.

The order, involving possible defects in the vehicles' emission control systems, would affect an estimated 310,000 vehicles. It would mark the first time a federal agency has ordered the recall of every car manufactured by a single company in a production year.

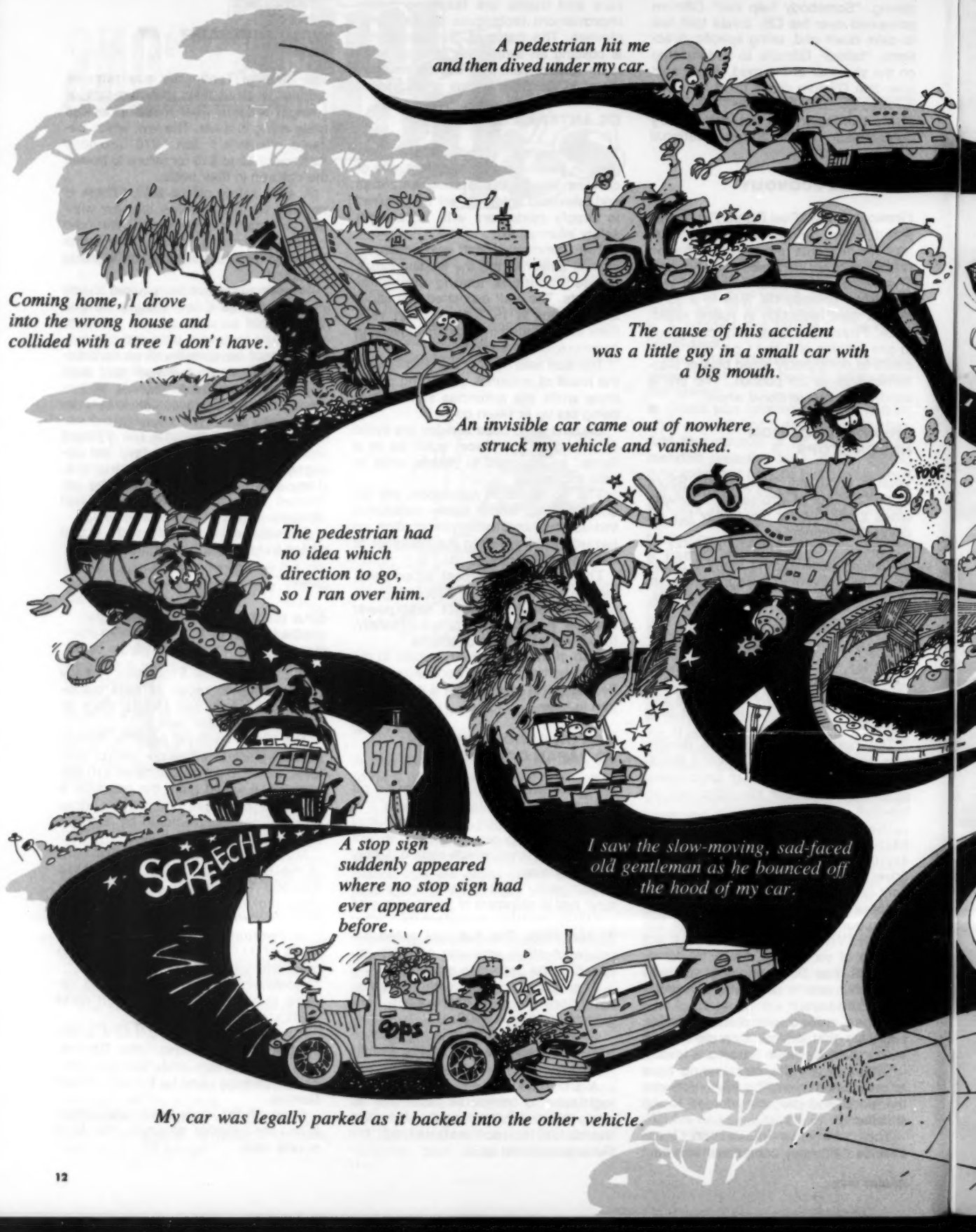
Meanwhile, in apparent anticipation of the EPA's order, AMC has recalled 153,000 1976-model vehicles to replace broken tubes that could increase emissions from the tailpipe.

In February, AMC announced the recall of 157,500 1976-model cars to repair the same defect.

However, the EPA recall would require that the corrective action meet agency standards.

The two recalls—and the EPA action—affect Gremlins, Hornets, Pacers, Matadors, Jeeps and "general dispatch" vehicles used by the U.S. Postal Service.

Most of the cars have 232 cubic-inch, six-cylinder engines, the EPA source said.


A pedestrian hit me and then dived under my car.
Coming home, I drove into the wrong house and collided with a tree I don't have.
The cause of this accident was a little guy in a small car with a big mouth.
An invisible car came out of nowhere, struck my vehicle and vanished.
POOF
The pedestrian had no idea which direction to go, so I ran over him.
STOP
SCREECH!
A stop sign suddenly appeared where no stop sign had ever appeared before.
I saw the slow-moving, sad-faced old gentleman as he bounced off the hood of my car.
Oops
BEND!
My car was legally parked as it backed into the other vehicle.

"REASONS THEY GAVE"

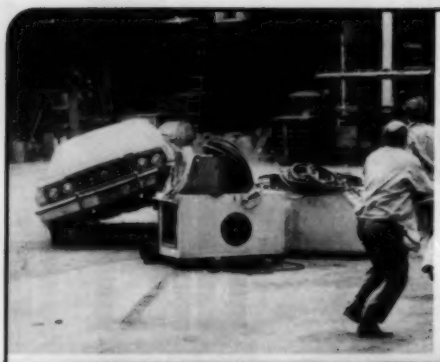
Have you ever known anybody who had a traffic accident who didn't claim it wasn't his fault? Probably not. After the accident, most people seem to feel that fate had taken hold and they were powerless to do anything to prevent it. Here are some excerpts from drivers' written statements that have been circulating among insurance offices. The drivers didn't mean to be funny—they were seriously trying to explain their involvement in the mishap.

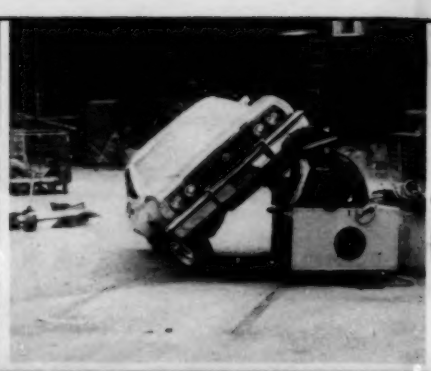
In an attempt to kill a fly, I drove into a telephone pole.

The guy was all over the road. I had to swerve a number of times before I hit him.

The other car attempted to cut in front of me, so I, with my right bumper, removed his left rear tail light.

I told the police that I was not injured, but on removing my hat I found that I had a fractured skull.





Leaping off
tall buildings in a single bound,
going faster than a
speeding bullet, or crashing
into a locomotive—to stuntman H

ALL in a D

nd,

an Hal Needham, it's

DAY'S WORK

Some people in the movie industry have called Hal Needham "King of the Hollywood Stuntmen," a title he doesn't deny. Born and reared in Tennessee, he has parlayed a love of the outdoors and a large amount of physical ability into a career that has spanned 300 feature films, 2,000 TV shows and a TV series, and is now branching off into movie directing.

He seems to be doing well at writing as well as directing, because his first effort, "Smokey And The Bandit," starring Burt Reynolds, is last year's second highest grossing film and fifth overall in movie history, having taken in over $200 million so far!

His newest effort, "Hooper," again starring Burt Reynolds, along with Jan-Michael Vincent and Sally Field, promises to be cast from the same mold. The photos in this article are all from "Hooper," a movie-within-a-movie. Hal tells us it's the story of an aging stunt man (played by Reynolds) who feels an up-and-coming newcomer to the stunt world (Jan-Michael Vincent) breathing down his neck in an effort to replace him as the Stunt King. Hal admits the movie is "somewhat autobiographical" but says not to read too much into it!

"Hooper" is about what happens to Reynolds and Vincent as they film a spy-spoof called "The Spy Who Laughed At Danger." According to Needham, the stunts will be the most spectacular attempted yet, including a car-jump over a river 420 feet wide. Writer-director Needham also confided that "we blew up about half the state of Alabama filming this movie." Buildings collapse, people jump out of perfectly good helicopters, and a few folks go for a ride in a rocket-powered Trans Am Pontiac! "Hooper" isn't designed to win any Academy Awards, but if action and adventure are what you seek when you go to the movies, then this may be the flick for you.

We spoke to Hal Needham while he was at the Warner Studios to oversee the music dubbing for "Hooper." What follows are Hal's comments about the job, the people, and the tricks of the trade of stunt men and women.

Started early: Maybe I was born to be a stuntman . . . all my life I've been dealing on the outside of stunts. I was born in Tennessee and reared around livestock, and that work was pretty physical. When I was in the Army, I volunteered for the paratroops, got in the 82nd Airborne, and wound up testing parachutes for the Army. While I was in the Army, I began working thrill shows on the weekends, and then for a little while I was a tree topper – you know, the guy that goes up and cuts the tree tops off and then hangs on for dear life as the ol' tree sways around. I guess I've always done things that seemed to have a little daring associated with them.

continued

Director-writer-stuntman Hal Needham shares a joke with Burt Reynolds and Jan-Michael Vincent during the filming of HOOPER.

continued

"Are you guys sure this is the only way to crash this party?" Burt Reynolds jumps out of a perfectly good helicopter . . .

When I got out of the service, they were doing a movie here at Warner Bros. called "Spirit of St. Louis." They needed a wing walker and parachutist . . . so here *I* come, fat, dumb, and happy, and I said "Heck, *I've* done that," so they just said "Hey, c'mere boy," put me in, and I did the show. We did the air show sequence with wing-walks, five-chute cutaways*, plane-to-plane exchanges, all that stuff. After the movie was in the can, I just kind of stayed around, and I'm still here.

Crazy? Are we crazy? Well, most people look at a stuntman and say "Hmmph, give him a drink straight from the bottle, put him on the motorcycle, and point him toward the wall." Actually, that's *not quite* how a stuntman works. When I go out there to put my butt on the line, I really put a lot of thought into what I'm gonna do, what rigging I'm gonna use, and all that kind of thing. And I always try to have an ace up my sleeve . . . an "out" . . . in case the stunt I'm trying to do turns sour.

Even though I always try to have an out, I've been wrong a few times and wound up in some precarious positions. I've broken bones and been hurt pretty badly, but that's the name of the game . . . it's why we make the big dollars.

A stuntman is really just an insurance policy for the studio. If you use us, your star won't get banged up and you can finish the movie using the same guy you began with . . . the studios tend to appreciate that!

No, stuntmen aren't crazy . . . just a little "outgoing." If we lived a hundred years ago, we'd have probably been scouts or some such. Stuntmen don't like a 9-to-5 grind. Some of them get a bit loose, but I think almost any job will make you want to blow off steam at times. We're not crazy . . . different, maybe . . . but not crazy.

Another ball game: When we get on a set it's a whole 'nother ball game . . . we get *very* serious about what's goin' on. Like, I've never tried a stunt where I thought I was gonna get hurt. Maybe I've said, "Hmmm, I hope this thing works . . . if it doesn't, I *could* get hurt," and sometimes it doesn't work. But normally, we plan everything so well that there isn't much that could go wrong. You've gotta remember that if you bust a stunt, not only do you get hurt, but also the studio is out a bunch of money, and that's not good for them *or* us.

It seems like most of the time we get hurt more doing the little stunts than doing the big ones. You *plan* more for the big ones and you get careless about the little ones.

For instance, say you're gonna wreck a covered wagon. Now, you've got a 2,000 pound projectile chasing you down the road and if you haven't planned right or if you're not on your toes, you can get wiped out. If something goes wrong, you find yourself out there fighting for your life. But you figure you've wrecked 15 or 20 wagons so far in your career and this'll be a piece of cake. You just don't plan a trick as carefully the 20th time as you do the first. Complacency is a bad word in all kinds of jobs, but in our business it can kill you.

Most dangerous trick: There are several stunts that would fit into my "most dangerous trick" category. I did a stunt a long time ago on a show called "You Asked For It." I jumped out of a low-flying airplane and "bulldogged" a man on horseback. I was supposed to dive out of the aircraft and knock the guy off the horse, but the airplane was going about 57 mph and the horse about 30 mph, so you can imagine that the timing on the thing was pretty critical. I also had to be careful not to hit the horse 'cause if I did the horse, the rider, and I would wind up in a great big pile . . . and horses are heavy.

I also did a pretty tricky gig for the movie "Little Big Man," with Dustin Hoffman. Another stuntman and I had to transfer from one horse's back to another, to another, and all this as the horses were hitched to a stagecoach and going at full gallop. You've seen that done before, but you'll notice that they always jump *between* the horses in hitch. Well, when they do that, they've got a big ol' board riding on the wagon tongue. You've got a nice place to jump to and land on, and you've got those fat harnesses to hold on to . . . it's just like takin' a stroll down Broadway.

We didn't do that. We jumped from the back of one running horse to the back of the one ahead. It was like doing a 14-foot-long standing broad jump. That wasn't too bad, except you

*A cutaway is when a jumper carries a number of chutes, deploys them one at a time, and then cuts them away to simulate failed chutes.

have to remember we had to jump *over* the horse's head in the process! Also, what a viewer doesn't see is that when we do a runaway stagecoach, there's a man inside the coach controlling the team with piano wires hooked to the traces. So, here I am, standing knee-deep in piano wires which I have to get out of *and* over as I jump, and when I land I have to be careful not to land on 'em and tangle 'em so the driver'll still have control.

Well, that was when we figured out that it's nearly impossible to make a standing broadjump of that length and height. So, we finally wound up getting in cadence with the horse's rear and using *it*, coupled with his forward and upward lunge, to propel ourselves on to the next horse. It took *seven months* to plan and shoot that one stunt.

Now those were stunts that had a real physical side to them, but there's another type of stunt that leans more toward the mental side of the ledger. I was once hired to take a pickup truck and jump it over the lake at Westwood Village. Well, that wasn't a real big problem, but what did worry me was the fact that the truck was propelled by an untried, 15,000 horsepower hydrogen-peroxide rocket motor! It was one of those stunts that, on paper, looked like it would work. But that was all we had to go on . . . the "on paper" performance.

I got to the set at 7 in the morning but, due to camera problems, I didn't get to try the stunt until 5 that afternoon. I would walk by the lake about once an hour, and every time I'd look at it, it would get 30 yards wider! By the time I finally got to do the stunt, I'd looked at that lake too many times and it seemed like the Atlantic Ocean.

But I'd opened my big mouth and told 'em I could do it, so there wasn't much else to do except strap myself in, push the button, and hang on. It was, ah, quite a ride.

600 MPH, no brakes: There was another thing I did that was a little hairy too, but it wasn't a stunt. Last year, I went to a place called Mud Lake, near Tonopah, Nevada, and I drove a land-speed-record car. That beast had 48,000 HP hydrogen peroxide rocket motor, and, looking back on the rocket-powered truck experience, I suppose I should have known . . . anyway, we got the speed up to about 620 mph, and I liked that. What I didn't particularly care for was the stopping parachute's failure to deploy. If you saw it on TV, you'll remember the last thing the cameras showed was me and that car bouncing off the end of the course and heading out into the boonies just puttin' a wheel down here and there to steer myself by. I'd have to rate that ride as a real thrill. As I was heading out into the desert, I remember I wished that that rocket car had an air bag . . . I thought I was sure gonna need it!

Air bag tester: You know, I was the first man to try an air bag in a car. I was working for Eton Corp., back in Michigan, testing air bag deployment, although I understand a lot of the preliminary air bag research was done by Allstate Insurance.

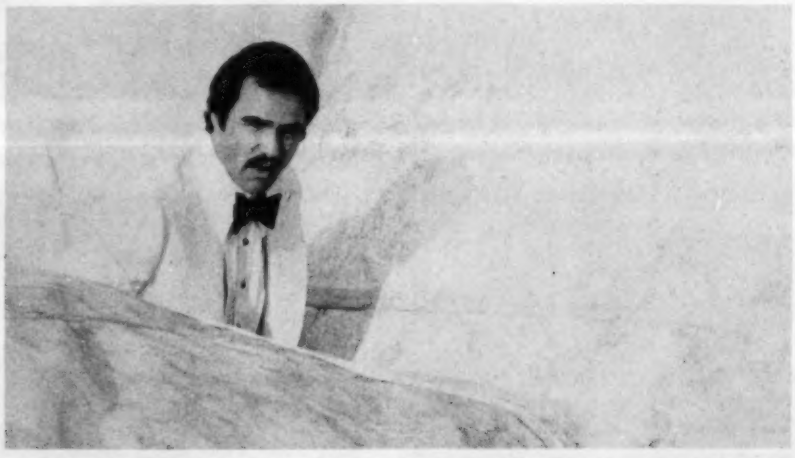
For Eton, I ran an air bag-equipped car into a concrete barrier at 25 mph. Now, that might not sound fast, but hitting something at that speed without wearing belts or having an air bag to depend on . . . well, it's easy to wind up having your teeth imbedded in the dash or an imprint of the hood ornament in your forehead.

I think the air bag is marvelous. As a matter of fact, I went back to Washington and testified before the Secretary of Transportation (DOT) preliminary air bag hearings because I felt so strongly about them.

I *know* air bags work. Not only have I used them in cars, but we stuntmen used them as "catchers" long before they went into cars. I think I was the first one to use an air bag to stop me after a "high fall" from a building. It just makes sense that if you distribute weight, or energy, over a large area, the shock is less. Belts distribute shock over maybe 50 square inches of your body, while a bag gives you about 300 square inches to work with.

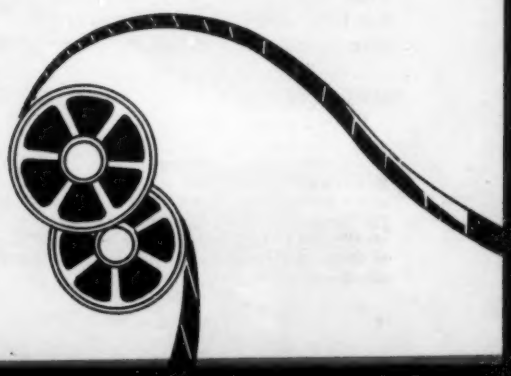
Look at it this way. You've got a a stunt that requires you to take a dive from a nine-story building . . . what are you gonna want to stop your fall? Personally, I'd prefer to fall into an air bag that stops me relatively slowly and spreads the deceleration forces over my whole body rather than hitting the end of the tie-line with 50 square inches of belt stopping me "right now."

Loves car stunts: I do a lot of stunts with cars, and I guess I'd have to say those are my favorite ones. I like the

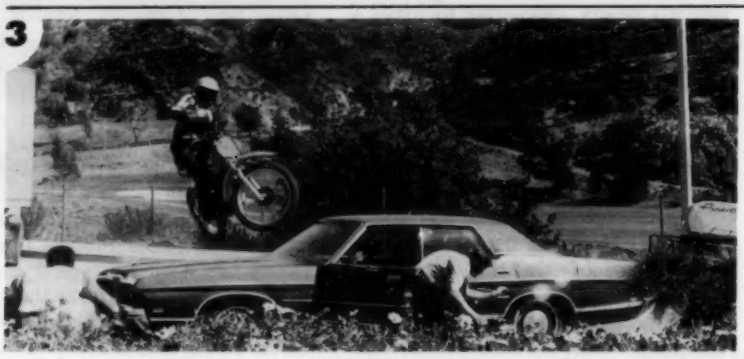


. . . into the "stuntmans' friend," the air bag. Perhaps someday it'll be the motorists' friend too.

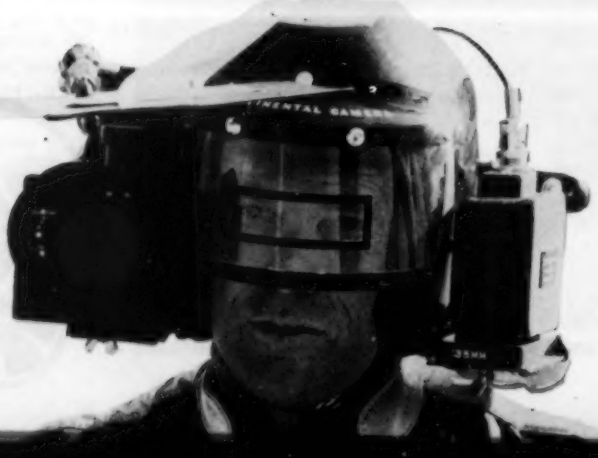
text continued on page 21
photos next 3 pages



(right)
Stuntmen do this for a living and because it sells movies. Real street riders would be well-advised to use the brakes and get stopped before it happens.



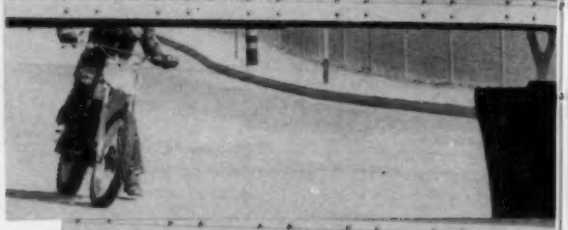
"So this is where the phrase 'hang in there, baby' comes from!"

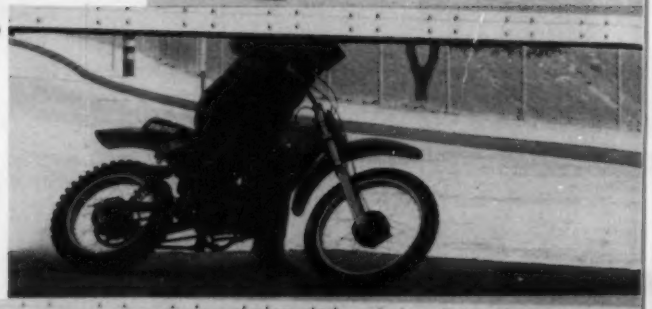


'Navigator to Pilot . . . when did the Wing Commander say we could go back to the old-style radar?" Helmet mounted camera gives riders-eye view of the action.

2

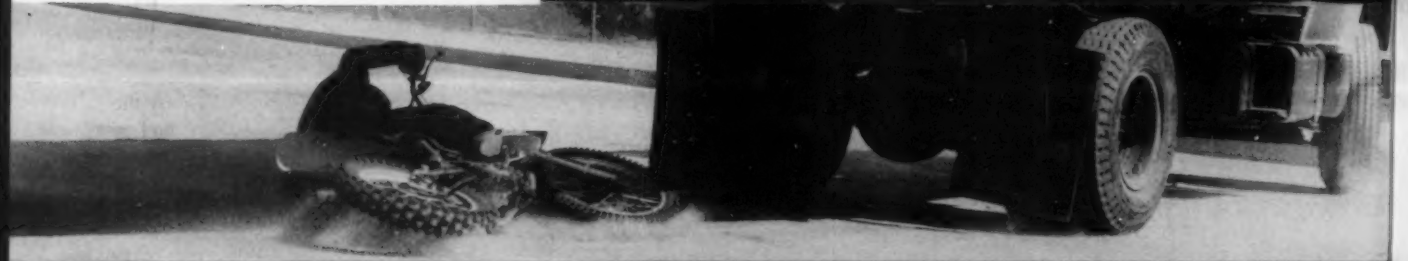
4





"Wait a minute . . . if Ralph is working the camera and Bob is holding script, THEN WHO'S DRIVING?"

(right)
We know most of our readers could get stopped in time to avoid the truck . . . but if you can't, here's a good argument for wearing leathers.



continued

control I have in a car. When I do a stunt with a horse or something, I *know* that the horse has a mind and a will of its own. If I want to go left and the horse wants to go right, well, both of us are gonna go right! That can make the best planned stunt in the world go sour in a hurry. When I work with cars, everything is under my control and how the stunt turns out is up to me.

Car stunts are safer in other ways, too. You can plan them down to the last degree. I've got a man named Bill Fredericks and I just call him up and say "Bill, I've gotta jump a car 80 feet, the car weighs 4250 pounds with the driver in it, and I've gotta clear a 10-foot wall . . . what do I need to pull it off?" He'll get out his computer and tell me to build a ramp 26 feet long, 0 to 42 inches high, and hit it at 87 mph. He tells me what kind of shocks to use, how much to weight the back end so the nose won't dig into the dirt on landing, and anything else he thinks I'll need to know. Like I said, we may be stuntmen, but we're *not* crazy and we *don't* enjoy gettin' hurt. You're gotta plan as much as you can for everything you do. But I guess your readers know that, since *I* learned it in the Army!

Bill Fredericks has designed a lot of equipment for our business. He came up with some neat designs for nitrogen ratchets and harnesses. You've seen the battlefield scene where a guy gets blown up in the air? The device that does that is a nitrogen-powered pneumatic ram. They used to be as big as a desk and take 10 men to lug around, bury, and get set up. Bill's made one about the size of a briefcase and it weighs only 50 pounds. It's touch-activated, so you just step on it and you're good for about 12 feet in the air . . . it's a gas!

Preparation is the key: Getting back to preparation for a minute, if you don't think that we give preparation a lot of time and thought, remember that I spent seven months getting ready to do that stunt in "Little Big Man" . . . and it took us three months just to *plan* the stunts for "Hooper."

People ask why more stuntmen and women don't get hurt . . . well, the plain fact is we *do* hurt quite a few, you just don't hear about it. Of course, a lot of the people who are hurt are amateurs or are new to the business.

"I still say the principal's gonna be mad about your 'senior prank', Fred."

They overestimate their capabilities. The reason we don't hurt more than we do is that we *insist* that stunt preparations be made to *our* satisfaction or we don't do the stunt.

We stay in close-to-perfect physical shape . . . and that's a big factor, too. So many people, in all walks of life, get hurt because they over-estimate their capacity or over-extend themselves. For instance, you can't just decide you want to take up racquetball and then go out and play an hour and a half the first day. I *guarantee* you'll pull a muscle or sprain something. Over-extended or over-tired people account for more accidents, both industrial and recreational, than I'd care to imagine.

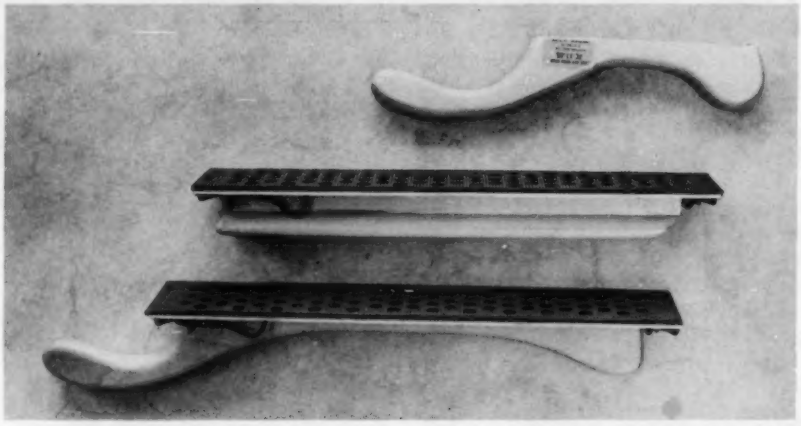
Good physical condition is important. Suppose you find yourself in the middle of a stunt that's going sour . . . the ability to move or jump one way or another and get out of it is your prime concern. If you're not in great physical shape, your agility, and therefore your ability to get away, is badly impaired.

Take a little simple thing like falling off a horse, something we do all the time. You're falling about five feet to the ground at 30 mph. Now, I don't care *who* you are, one thing is certain . . . you're gonna hit the sod. If you're 30 pounds overweight, well, that's 30 extra pounds of hurt. You've gotta stay in shape to be competitive at almost anything. If you were a stunt coordinator, would *you* hire an out-of-condition stuntman? Bosses in any type of business probably look at this in the same way. They think "if this person doesn't care enough about himself to stay in shape, will he care enough about the job I'm offering?" So, staying in shape can have benefits other than just feeling good . . . it can help you get or keep a job.

Grin and bear it: We get paid by the stunt, and during one movie I had to fall off a 15-foot high rock about 12 times in one day. The director would yell at somebody for fouling up the "take" and then he'd come over to me and say, "Hal, I'm really sorry about making you do this over." I just kept grinning and said, "That's OK, let's try 'er again." I must have made $6,000 that day, and I'm sure that some directors can't understand why I just keep grinning.

(above)
The dolly blocks (which are actually small anvils) shown here are: (top) general purpose, (lower left) toe dolly, (lower right) heel dolly. Also available are mushroom- and wedge-shaped dolly blocks.

(right)
The top object is a file holder, bottom two are sanding blocks that hold sandpaper and are used to uniformly sand large, flat surfaces.



Scientists have discovered biorhythms quite recently compared to car owners. We have known about them for years! Biorhythms are a series of up-and-down cycles in your life and can be plotted well in advance. The scientific procedure can be a bit complicated though, and accuracy isn't 100% yet. However, *we* can tell exactly when a person will begin his or her biorhythm cycle just by knowing one simple fact . . . the time and day that person buys a new car.

It doesn't have to be a brand new Belchfire 8. It can be a three year-old Webbly-Vickers 804 Economiser

do you really

a

The backyard mechanic takes a few swings at automotive body work

Special. The fact of the matter remains . . . to the new owner, it is a new car, and woe be unto anyone who makes any nasty remarks about it.

To chart an individual's biorhythm, simply take the hour and date of delivery as the top end of the high cycle, add two hours, and that will be the bottom of the cycle.

How do we know this? Because it is guaranteed that about two hours after you take delivery of your new pride and joy, some turkey will put a dent in it. If you park it in the SAV-O-MART lot, three miles from the nearest car, someone will pull alongside and PING. Or you could park in your driveway and your dearly loved, but faintly senile, Aunt Alice will pull in with her old Buick . . . the one with the good body but tricky brakes. . . .

In a flash, you've got a brand new car and a brand new dent. It never fails.

What can you do? Parking in a concrete garage is one answer, but that kinda defeats the reason you bought the car. You could stand guard over it, but as any Security Policeman can tell you, that 0200 to 0600 shift can be a real bear. One thing to do is accept the fact that your new car has a dent and won't get any more for a while. However, if you take a great deal of pride in your vehicle, the idea of a dent just doesn't sit too well. And of course, sometimes we buy a predented car with the idea of "fixing it up," and selling it for a juicy profit. It all comes down to one thing . . . those dents, dings, and scratches have gotta go!

Beginning with this issue, the Backyard Mechanic will delve into the mysteries of automotive body repair and painting. We'll begin with tools and equipment, move on to actual repair techniques, and end up at painting. It isn't simple, but it isn't all that difficult either, if you have a minimum of manual dexterity and a lot of patience. Also, if you think this series won't be worth your while, swoop on over to your local auto-body repair

continued

continued

shop and check out his prices . . . it may change your mind about attempting body work yourself.

Basic tools: Unless you're the bionic man, your hands just will not work well for pounding out dents and creases in your steed's flank. Almost any type of body work outside of minor scratches will require a selection of hand tools designed for the job, and some dents and creases will require the use of power tools. Usually, a good selection of hand tools will cost from $30 to $200. That might seem like a lot until you remember the tools can be used over and over again, and $200 is about what you'd pay for some minor repairs at a body shop.

Power tools are normally available at your base hobby shop, or can be rented from many tool-rental agencies.

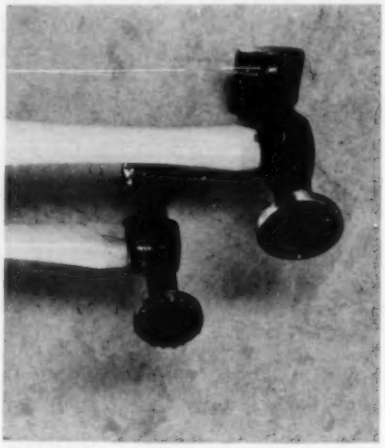
After we cover what tools you'll probably need, we'll briefly go over the other materials used in most body work so that when you go to the auto parts place, you'll have a better idea of what is available for you to use in your particular situation.

Hammers: The tool most commonly used in automotive body work is the hammer, also called a dinging hammer. Used in conjunction with dolly blocks, hammers are the primary means of removing dents from sheet metal.

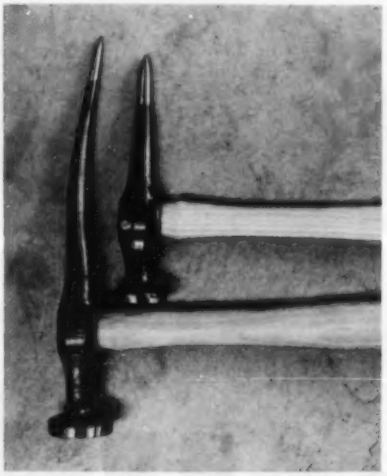
Take a look at the picture of the hammers. You'll notice that the face of the *dinging hammer* can be either round or square. The round-face hammer is used for general metal working in unconfined areas, while the square-face hammer is used where adjacent areas limit usefulness of the round hammer. Such an instance would be if you're working close to a fender welt, bead, or other ornamentation. You want as much of the hammer surface as possible to strike the work, and if you used a round-face hammer, the circumference of the face wouldn't allow you to work near an obstruction with full-face contact. Also notice that the face of the hammer may be slightly crowned.

The overall length of the head of a dinging hammer is usually between 4 and 6 inches. This variation in "reach" is needed because of, again, limited working space . . . under a fender, for instance.

The combination or pick hammer, is probably the most-used tool in the body shop tool box.



Notice the difference in the faces of these two dinging hammers. The one with the corrugated face is used for "shrinking" metal, while the smooth face is used for general-purpose work.



Dinging hammers come in different "reaches" or lengths so that if you have space limitations you can use the shorter, lighter one instead of fighting with the long one.

The *combination hammer* will have both a dinging end and a pick-shaped end. It is used to remove small dents which would be difficult to remove with the dinging hammer and dolly block method. Combination hammers come in a variety of weights, point sharpnesses, and "reach."

Hammers resembling the dinging hammer, but having a corrugated face, are used for "shrinking" metal.

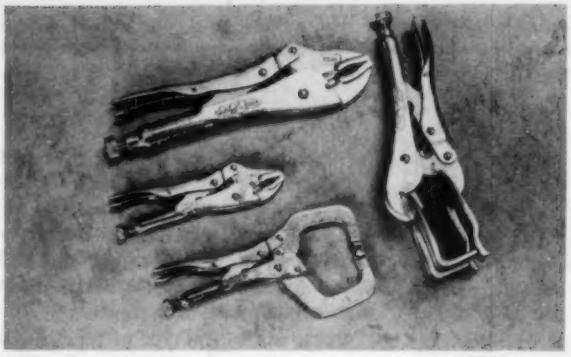
And of course, you'll always need a conventional mechanics' hammer (also called a ball peen) to strike cold chisels, since we all know that claw or carpenters' hammers are *never* used for anything except hitting nails.

Fiberglass handles for hammers are much less prone to shrinking and splitting, as opposed to wooden handles. Remember too that hammers are good for hitting *some* things, and not so good for hitting others . . . like, you don't use a hammer to hit the face of another hammer, concrete, caps from cap pistols, your buddy, welding tanks and fittings, or anything that will hit back. A hammer is *not* a pry bar, an auxiliary nut-loosening device, a wedge, or a generally accepted tune-up tool.

Dolly blocks: The term "dolly block" has been around a long time and stems from the word dolly, which is a device used when something is too heavy to be moved with human hands. Dolly blocks are used as small anvils because you can't use your hands to hold a metal surface steady when you're hammering against it.

Dolly blocks are held on one side of the metal while the other side gets whacked by the hammer. Dolly blocks come in many weights, sizes, and face curvatures so that the surface of the metal to be worked can be easily duplicated by using the correct dolly block.

Dolly blocks are *not* hammers, and we guarantee that if you use one as a hammer, when you strike the object to be struck, you will lose your grip, and the dolly block will fall from your hand directly onto your big toe. So, if you're gonna use a dolly block like a hammer, be sure you also use steel-toed safety



Vice-grip pliers are the bodyman's friend. They hold metal pieces together for alignment purposes and are used as mini-jigs to hold pieces prior to welding.

shoes. Now that we think about it, why not use safety shoes anyway? Then that turkey in the next stall in the auto hobby shop (who you always suspected wasn't wrapped too tight) can use tools incorrectly, slip, and *you* won't have to pay the price of *his* ignorance.

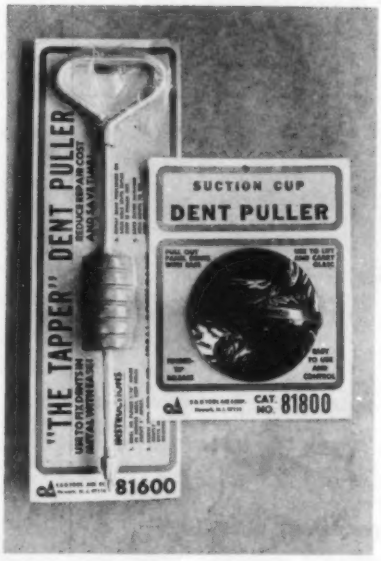
Spoons: The spoons we are referring to are not the ones which are what newborn rich kids have in their mouths . . . the spoons we speak of are multi-purpose tools. Of course, many people consider a screwdriver as a multi-purpose tool when actually its only function is to drive screws, but spoons are legit multi-purpose tools. They can be used as pry bars to pry metal back into its original position, or they can be used as dolly blocks when the area you want to straighten is beyond the reach of hand-held short dolly blocks. You can use a spoon as a dolly block, for instance, to back-up your hammering efforts on a door or deck lid where the clearances are too narrow to slide in a dolly block.

You can use a spoon to distribute the force of a hammer blow over a larger area. If you have a situation where there is a small crease in the metal and the paint surface isn't broken, you put the spoon against the ridge and then hit the spoon with the hammer. You can get rid of the ridge without marring the paint.

A spoon can also be used as a "slapper." Slap the dented metal with the spoon to remove the dent. Depending on the amount of enthusiasm with which you attack this last task, noise pollution can be a problem, so maybe a set of ear plugs would be in order.

Vise-grips: Vice-grip pliers have many uses around a body shop, the two primary uses being to hold pieces of metal together so that they can be

Some of the products and tools used for filling small dents and dings.

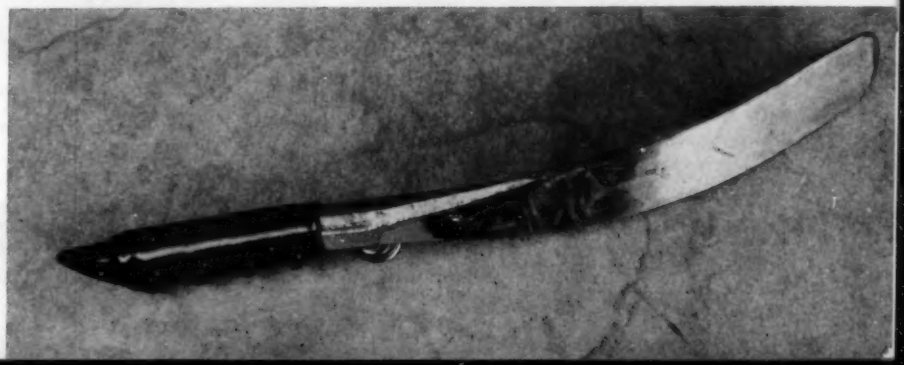


welded, and for holding the standard handleless stainless steel coffee cup which is always found at the better body shops, said cup being the junior-high school shop project of the shop owner who never learned the trick of attaching handles but who wouldn't want to part with the cup for sentimental reasons. Seriously, vice-grips are handy tools, but like most tools they require care. The threaded portion of the adjustment mechanism should be kept clean and well lubed, and the

continued

(left)
Dent pullers are used to remove both compound and simple dents. The suction cup puller doesn't leave any holes to fill, but the screw-end puller will work out even the biggest dents.

A spoon, or "slapper" (below) can be used as a dolly block for inaccessible areas, or as a dinging hammer. Make sure the grip is firmly installed before using this tool.



teeth in the jaws should be cleaned regularly with a wire brush.

File holder: Flexible files are used to shave off plastic filler material from surfaces that are curved. The file must be flexible to follow the contour of the curve, and the use of flexible file holders allows the file surface to be flexible while still providing an adequate surface so you can grip the tool with your hands.

Flexible files are also used to file metal surfaces after dinging work. High spots are cut down quickly, and the raspy file surface leaves marks on the flat metal which won't show in low spots, making them easier to find.

Hand tools: The tools we've described so far are considered basic tools for the body repair trade, but in addition to these tools you'll still need wrenches and other hand tools for disassembly of body components. Most major retail chains (Sears, Penney's, Montgomery Ward) have basic hand tool kits on sale for about $35. Since you'll need hand tools for almost any phase of automotive work, why not pick up a set the next time they're on sale? It's so much nicer to use the proper wrench on that stubborn nut, rather than skin your knuckles trying to get it off with a pair of borrowed pliers.

Power tools: Air- or electrically-operated tools that find continuous use in a body shop are grinders, orbital sanders, disc sanders, and files.

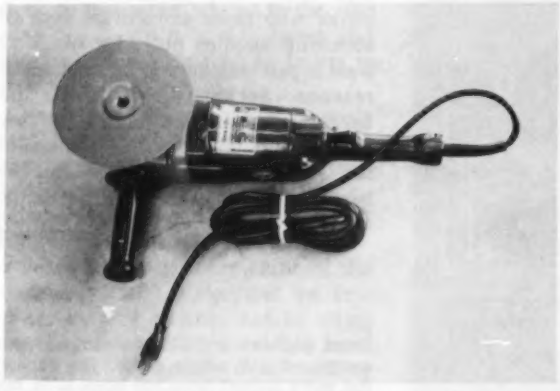
Having all of them at your disposal would be nice, but if your bucks are limited, rent an air file or a dual-action sander. The air-powered file is actually a powered sanding board. It covers large areas at one time and its length prevents ripples and waves in the metal which can foul up the final appearance of your paint job.

The dual-action sander is especially good for use on curved surfaces and for "feathering" or tapering layers of paint around a damaged area.

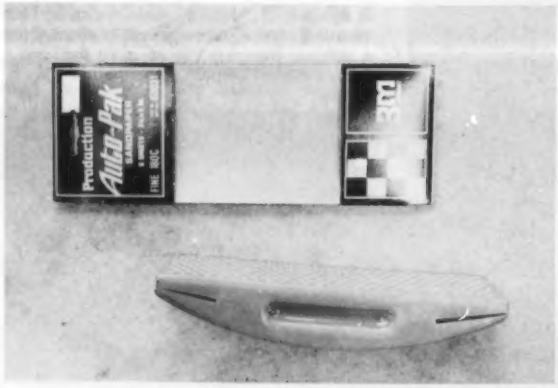
Top quality powered tools can be bought for as little as $50 from specialty mail-order houses, if you feel that you'll be needing them a lot more than a rental basis would justify.

Other stuff: The type of repairs you are going to make determine the kind of, and amount of, materials you'll need for the job. Some repairs will only require lacquer putty or spot putty. Others will be the filling of small dents and dings. These may require the use of body plastic, fiberglass mat, fiberglass cloth, auto body solder, or lead.

Your friendly local auto body parts and supply house can advise you in more detail than we can go into here. They can also tell you about sandpaper . . . whether you need "wet" or "dry," and inform you about what grits will be best for the job you want to do.



This professional-type grinder/buffer accepts different types of discs so that it can serve several purposes.



Fiberglass mat and fiberglass cloth have different purposes. Check with the salesman in the auto body supply shop to determine which is right for the job you want to do.

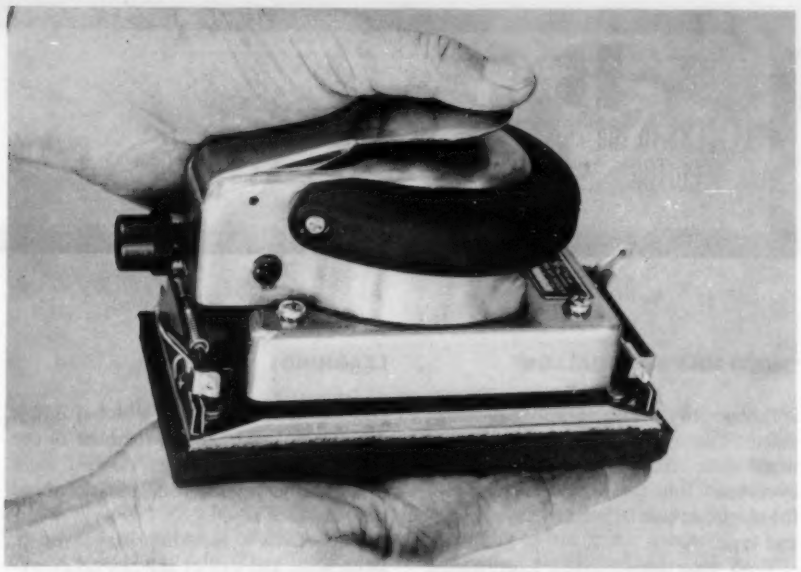
(left)
Small, flexible sanding blocks are good for gently curving areas on fenders or doors. You can make your own sanding block by wrapping sandpaper around a short length of old radiator hose.

At the body supply store, you'll also find the little tools that make any job go easier. This group of small tools would include squeegees (for applying body putty), putty knives, various masking tapes and papers, face and nose protection devices like air masks for the nose, and paint straining systems.

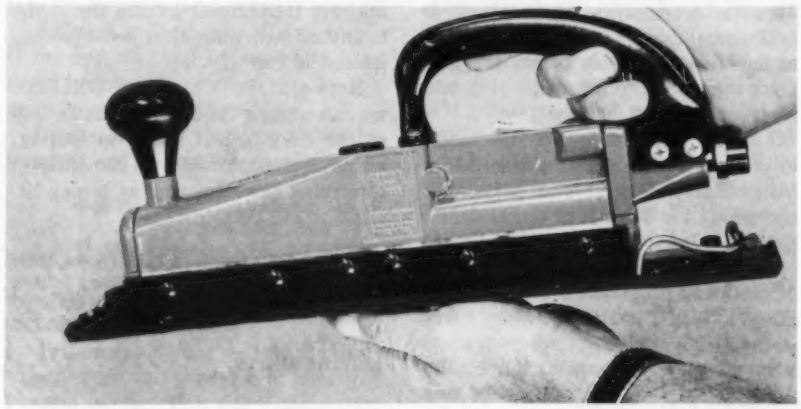
They also carry material that is necessary to many body repair jobs but that isn't found anywhere else. Stuff like door, window, and trunk weather stripping, seal adhesive, vinyl seat repair and coloring kits, headliner kits, pinstriping tape or paint, and engine and accessory paint.

Next: In our next installment, we'll cover simple dent and ding removal, and then we'll finish up with basic painting techniques and paint shop safety. Stay tuned . . . we'll show you how to turn that $500 car into a thing of beauty.

Try to get the parts you need before you begin the job. In almost every instance involving body work, you'll need spot putty, lots of good sandpaper, and masking tape.

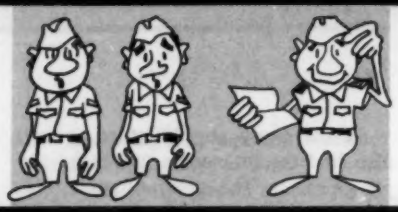


An air-powered orbital sander can be rented for as little as $8 a day and can save you much handwork.



An air file is used for quickly and easily sanding large flat areas. It is quite expensive though, and unless you have to do the whole car, you might be better off getting **one of these dual-action,** random-pattern orbital sanders. They cost less, and with a five-inch pad, they can cover a lot of area almost as fast as the air file.

LETTERS to the EDITOR BACKfire



"MORE MILES PER GALLON"

I thoroughly enjoy DRIVER Magazine. The articles for pros and amateurs alike make it a usable tool for everyone. I have learned many helpful hints that can be used to save money and time.

With your June issue I have started to brief some of your articles on safety and other valuable items at roll call. This has accomplished two things. It gets some excellent information out to the troops and also breaks the monotony of morning roll calls. (Nobody went to sleep this morning!)

I would like to bring up one point in your June issue article titled "More Miles Per Gallon." The paragraph containing the subject of reversed coil polarity states in part, "do it yourself by removing an ignition wire from one of the spark plugs while the engine is idling." I used to try that when I was younger. I wouldn't want to try it now. Someone may get the shock of their life doing it. May I suggest one of two things instead. Either shut off the engine first, or buy a pair of pliers that is made for this purpose. It may save a bump on the head when jumping back after being shocked.

Also, if you use a pencil to check the polarity, it may be a good idea to sharpen both ends. The spark may have a hard time jumping through the eraser end of the pencil.

Thanks again for a worthwhile magazine, and keep up the good work.

MSgt Marion D. Kirk, USAF
111 Pennsylvania
Victorville, CA 92392

Thank you so much for the tips. Sorry we goofed, folks.

LEARNING

Having read DRIVER since joining the service, and being a member of the AMA for almost a year now, I have to commend you for your remarks about the AMA.

The AMA's monthly magazine is interesting and full of articles on everything from our rights to clubs and local activities, dirt squirting to street riding. I'd recommend joining the AMA to anyone with more than just a passing interest in motorcycles.

Between the AMA and DRIVER we can educate the expert riders as well as the novice. Dirt bikin' to touring, whatever your interest, we can all learn something new, amazing as it may be. Good work, DRIVER.

AME2 Sanford E. Snyder, USN
VAQ-129 NAS Whidbey Island
AMA No. 721753
Oak Harbor, WA 98278

METRIC UNITS

In your Apr '78 issue there appeared a letter and your response to the metric pressure unit KILOPASCAL. The unit makes sense and is consistent with the metric units of force and area. Pressure, after all, is Force per Unit Area.

In the Meter-Kilogram-Second (MKS) system of metric units, the unit of Force is the Newton. One Newton is the force that will accelerate a mass of one Kilogram at one meter per second per second.

$$(1\ Nt = \frac{1\ Kg\ m}{Sec^2})$$

The unit of area is the square meter (m^2). Pressure, or Force per unit area, then, would be expressed in Newtons per square Meter $\frac{(Nt)}{m^2}$.

One Pascal is simply One Newton per Square Meter $(1\ Pa = \frac{1\ Nt}{m^2})$.

As you indicate in your response to the letter, the prefix "Kilo" means thousand, so $1\ KPa - 1000\ Pa = 1000\ \frac{Nt}{m^2}$.

For comparison with the pound per square inch (psi) pressure unit of the English System:

$$1\ psi = 6.897\ KPa$$

LCDR W. G. Collins, Jr., USN
P.O. Box 1772
Idaho Falls, ID 83401

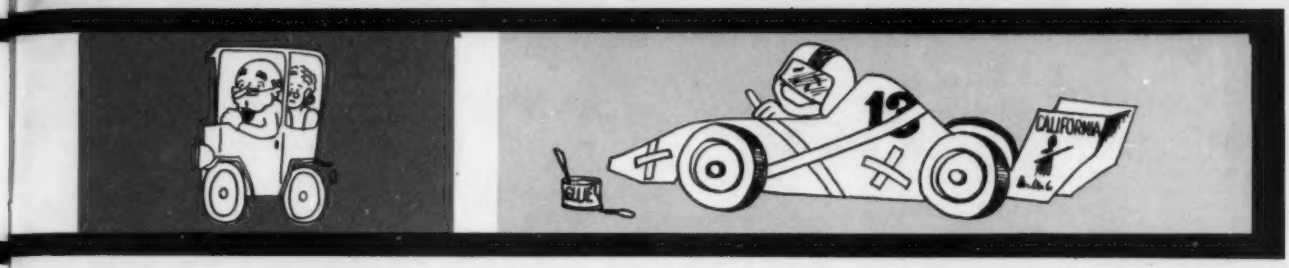
DISGUSTED

I have enjoyed reading your magazine for quite some time. Although I don't agree with everything that you print, I read it and form my own opinion. I am a firm believer in the saying, "Let Those Who Ride, Decide."

However, I was leafing through the Feb '78 issue and spotted a picture you had printed that totally disgusted me. On page 14 you show a picture of an elderly couple within a crosswalk, with a biker sitting with his front wheel inside the line. This picture is in very poor taste.

For a magazine that is trying to help improve the biking image, you really aren't making a very good show of it. We, as bikers, get enough bad and unwanted publicity without your magazine printing pictures such as this. What really added insult to injury was the caption that was used for it. You may have intended it to be humorous, but as a biker I didn't find it the least bit funny.

You have an excellent magazine, with some very informative articles,



but you should be more selective in the choosing of your pictures and captions.

MM1 (SS) G. Michael Sadler, USN
FLEBALMISUBTRACEN
Charleston, SC 29408

The picture in question illustrated an article called "Patience With Pedestrians." It showed a very bored woman driver and an even more bored motorcyclist, stopped at a crosswalk waiting for an elderly couple to cross the street. Also in the shot is a 1916 Detroit Electric, entering the street from a driveway. It's one of our favorite photos and we have a blow-up of it hanging on our office wall. Our photographer went to a lot of trouble to set it up and it surely wasn't intended to reflect badly on the cyclist, who is exhibiting patience exactly as we recommend.

MOTORCYCLE SAFETY

I am an avid motorcycle rider and wish to commend you on your articles concerning motorcycle safety, although what one thinks depends on whose statistics one chooses to believe. I read with interest and much dismay the letter in your Feb '78 column by Sgt David M. Osgood on motorcycle safety gear. I am glad that various and sundry state legislators are realizing that they can't force laws upon people who feel so strongly against them they do something about it.

Unfortunately, contrary to what I was taught in school, laws are not always made to protect the people but to protect and/or benefit any interest group with a strong enough lobby. The government's job is to protect people from the actions of others, and to protect our rights to what freedoms we have left. The key to lowering the accident fatality rate is education for bikers and automobile drivers. In my opinion, a rider should not have to don an armor suit in anticipation of battle on the highways.

Don't get me wrong, now. I know a few and have seen many more people who have no place whatsoever on a motorcycle of any sort. They need educating most of all.

What this country needs is fewer mandatory laws and smarter actions on the road on the part of all concerned. (I for one am tired of paying to have these laws made, then having to pay again to get them unmade.)

Thanks for your time and for an interesting and informative magazine.

Sgt Daniel C. Cleveland, USAF
355 CRS, 355 TFW
Davis-Monthan AFB, AZ 85707

FOUR WHEELING

In response to your article on four wheeling in the May issue of DRIVER I would like to make a few comments.

First, I would like to say that I've been using all four wheels for power for 15 years and I agree with most of what you said in the article. Your list of "bring alongs" was quite complete with the possible exception of a large tube of "Liquid Steel." I've seen some large holes in oil pans, transmissions and even engine blocks gooed up with that stuff well enough to get them into the pits (home). You didn't emphasize the need for racers tape too much. I've seen it hold a fiberglass body together at 300 mph at Bonneville.

Secondly, I'd like to comment on your statement, "At this point, all you off-roaders who have full-time 4WD can chuckle up your sleeves . . ." It's true that I do have to get out to change my hubs for 4WD, but I've also used half the gas the full-time 4WD user has to get to get to where I want to go. I'm not turning all that extra metal up front to go down a smooth road. I felt your statement could be misleading to a person buying his first four wheeler. There are definite benefits and drawbacks to both systems and the person should weigh them both and select according to his or her needs.

Another point I've run into in off-roading is the reluctance of many to use 4WD unless everyone else with them is using it. I've found that on stretches where the road is winding and your speed remains low for a period of time many vehicles, especially GM products, load up the cylinders and foul the plugs from the low RPM driving. This can be easily solved by selecting 4WD-LO and using the LO-Range for keeping your RPMs up. It has worked real neat for a lot of people.

Last, and probably most important, I think you should have mentioned, since your article was aimed largely at the new four wheeler, the fact that using 4WD on ice can be treacherous. The whole premise for turning in the direction of a skid is to get the tires rolling at the speed of the vehicle and regain traction. If you go into a skid in 4WD this is next to impossible because the engine speed won't let the wheels get traction. If you pull out of a skid in 4WD on ice, you can assure yourself that it was through a great deal more luck than skill that you pulled it through. I would highly recommend that 4WD not be used while driving on roads where icy conditions exist, and *never* while going downhill on ice or hard snow.

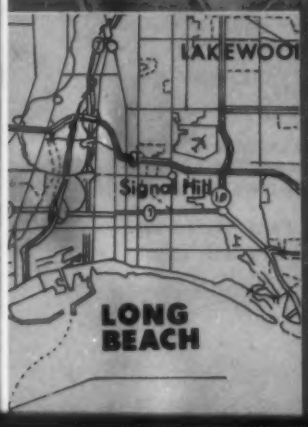
Keep up the good work, your magazine is tremendous.

TSgt Fred C. Johnston, USAF
482 W. 5th Street
San Jacinto, CA 92383

Thanks for the tips, Fred. We're sure our newer four-wheelers will appreciate them.

☆U.S. GOVERNMENT PRINTING OFFICE: 1978—783-116/109

The Drivers



Sgt Chuck Cullen and A1C Rhonda Washabaugh plan the freeway route from their duty station at Norton AFB, Calif., to Long Beach, where they want to tour the famous English ocean liner, "Queen Mary." The trip will take them over several different freeways as well as on Long Beach surface streets. They are going to follow all the good advice we offer in "Life in the Fast Lane" which leads off this issue. Incidentally, Chuck is Chief Clerk in the Medical Inspection Division at the Air Force Inspection and Safety Center. Rhonda is assigned to Norton's Office of Information, where she briefs newcomers and acts as base tour guide.